PRODUCTION OF 4,4'-DIPYRIDINIUM SALT

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Abstract

PURPOSE:To selectively produce a 4,4'-dipyridinium salt useful as a synthetic raw material or an intermediate for various chemicals by using a light energy.
CONSTITUTION:A 4-cyanopyridinium salt derivative of formula I (R is substitutive alkyl or substitutive benzyl; X<-> is pair anion) is subjected to decyanocoupling reaction by irradiating the derivative with light, preferably ultraviolet rays in the presence of a semiconductor light catalyst to provide the objective 4,4'-dipyridinium salt derivative of formula II, e.g. N,N'- dimethyldipyridinium dichloride. As the semiconductor light catalyst, a semiconductor such as a metal oxide, e.g. titanium oxide, zinc oxide or tungsten oxide, a metal sulfide, e.g. cadmium sulfide or zinc sulfide, a metal phosphide, e.g. indium phosphide or gallium phosphide and a metal selenide, e.g. cadmium selenide or a semiconductor on which gold, platinum, palladium, etc., is carried is preferably used and when the catalyst is used as a suspension in a solution, semiconductor particles having 1000-10nm particle diameter is preferred as the catalyst.